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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/677,304	09/29/2000	Yukihisa Takeuchi	789_056	2413

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BURR & BROWN  
PO BOX 7068  
SYRACUSE, NY 13261-7068

EXAMINER

DOUGHERTY, THOMAS M

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 04/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/677,304

Applicant(s)

TAKEUCHI ET AL.

Examiner

Thomas M. Dougherty

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE \_\_\_\_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 March 2002.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 13, 14, 15, 18
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_

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## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed 3/22/02 have been fully considered and the remarks concerning the Nakashima et al. and Miyazoe references are persuasive and the rejections based on those references are deemed overcome.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki (JP 2-119278). Aoki shows (figs. 2 and 4) a piezoelectric/electrostrictive device comprising: a pair of mutually opposing thin plate sections (9) made of metal and a fixation section (13) for supporting said thin plate sections (9); an object (15) attached to forward end portions of said pair of thin plate sections (9); and one or more piezoelectric/electrostrictive elements (10) arranged on at least one thin plate section of said pair of thin plate sections (9), said at least one thin plate section defining a substrate for each respective piezoelectric/electrostrictive element (10), wherein: an areal size of a surface of said object (15) opposed to said thin plate section is larger

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than an areal size of an object attachment surface of said thin plate section, determined by sight. A first adhesive (inherent as noted in paper 12) is allowed to intervene between said piezoelectric/electrostrictive element (10) and said thin plate section (9). Said object (15) is secured to said object attachment surface of said thin plate section (9) by the aid of a second adhesive. Note that if this were not so, the component would not be maintained between the plates (9). Said object (15) is attached to only forward end portions of said pair of thin plate sections. Said piezoelectric/electrostrictive elements (10) have a piezoelectric/electrostrictive operating portion defined between opposed electrodes, and the piezoelectric/electrostrictive operating portion extends from the fixation section onto at least a portion of said at least one thin plate section (9).

Aoki fails to show his piezoelectric/electrostrictive element or elements only on one side of his thin plate sections. It would have been obvious to one having ordinary skill in the art at the time the invention was made to omit a piezoelectric/electrostrictive element or elements on one side of the thin plate sections, since it has been held that omission of an element and its function in a combination where the remaining elements perform the same functions as before involves only routine skill in the art. *In re Karlson*, 136 USPQ 184.

4. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki (JP 2-119278) further in view of Takeuchi et al. (US 6,091,182). Given the invention of Aoki as noted above, he doesn't discuss an organic resin, glass, brazing material or solder for adhesion of the piezoelectric/electrostrictive elements to his thin plates. Takeuchi notes at col. 25, ll. 35-38,

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use of “organic resins, ... and glass” for adhering components in a piezoelectric/electrostrictive device. He doesn’t show the structure of two thin plates, a fixation section or object between the thin plates. It would have been obvious to one having ordinary skill in the art to employ the adhesives noted by Takeuchi in the device of Aoki at the time of his invention since these are known and readily available materials which are shown by Takeuchi to be used in the art.

5. *Conclusion*

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Regarding the newly claimed feature, that being that the unimorph layer or layers are all on one side of the thin plate section, note that Nakashima, et al. ('177) show their piezoelectric/electrostrictive elements only on one side of their thin-plate sections.

*tmd*  
tmd

April 3, 2002

*Thomas M. Dougherty*  
THOMAS M. DOUGHERTY  
PRIMARY EXAMINER  
GROUP 2100  
2834